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SEP 28 2006

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TO: Commissioner of Patents  
 FAX NO.: (571) 273-8300  
 FROM: Kin-Wah Tong, Esq. Reg. No. 39,400  
 DATE: September 28, 2006  
 MATTER: U.S. Serial No.: 09/894,898 filed June 28, 2001  
 DOCKET NO.: SRI/4438  
 APPLICANT: John W. Butzberger, et al.

The following has been received in the U.S. Patent and Trademark Office on the date of this facsimile:

<input checked="" type="checkbox"/> Appeal Brief	<input checked="" type="checkbox"/> Transmittal Letter (2 Copies)
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<input type="checkbox"/> Priority Document	<input checked="" type="checkbox"/> Deposit Account Transaction
<input type="checkbox"/> Amendment Under 37 C.F.R. §1.111	<input checked="" type="checkbox"/> Facsimile Transmission Certificate
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September 28, 2006

505026-1

PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

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TRANSMITTAL  
FORM

Application Number

09/894,898

Filing Date

June 28, 2001

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First Named Inventor

Butzberger, et al.

Art Unit

2826

SEP 28 2006

Examiner Name

Pierre, Myriam

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Attorney Docket Number

SRI/4438

## ENCLOSURES (check all that apply)

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## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm	Patterson & Sheridan, LLP		
Signature			
Printed Name	Kin-Wah Tong, Esq.		
Date	September 28, 2006	Reg. No.	39,400

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Typed or printed name	Tara Carter
Date	September 28, 2006

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PTO/SB/21 (09-04)

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TRANSMITTAL  
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Application Number

09/894,898

Filing Date

June 28, 2001

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First Named Inventor

Butzberger, et al.

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Art Unit

2626

SEP 28 2006

Examiner Name

Pierre, Myriam

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Total Number of Pages in This Submission

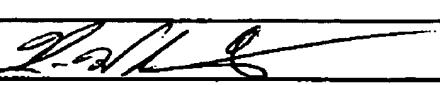
Attorney Docket Number

SRI/4438

## ENCLOSURES (check all that apply)

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Remarks		

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Signature			
Printed Name	Kin-Wah Tong, Esq.		
Date	September 28, 2006	Reg. No.	39,400

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Typed or printed name	Tara Carter
Date	September 28, 2006

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PAGE 3/47 \* RCVD AT 09/28/2006 4:10:26 PM [Eastern Daylight Time] \* SVR:USPTO-EFXRF-3/8 \* DNIS:2738300 \* CSID:732 530 9808 \* DURATION (mm:ss):18-06

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Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

## FEE TRANSMITTAL for FY 2006

 Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 250.00)

Complete If Known	
Application Number	09/894,898
Filing Date	June 28, 2001
First Named Inventor	Butzberger, et al.
Examiner Name	Pierre, Myriam
Art Unit	2826
Attorney Docket No.	SRI/4438

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**FEES CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES	
	Fee (\$)	Small Entity	Fee (\$)	Small Entity	Fee (\$)	Small Entity
Utility	300	150	500	250	200	100
Design	200	100	100	50	130	65
Plant	200	100	300	150	160	80
Reissue	300	150	500	250	600	300
Provisional	200	100	0	0	0	0

**2. EXCESS CLAIM FEES****Fee Description**

Each claim over 20 (including Reissues)

Each independent claim over 3 (including Reissues)

Multiple dependent claims

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Small Entity	
				Fee (\$)	Fee (\$)
-20 or HP=	x	=		50	25
				200	100
				360	180

**Multiple Dependent Claims**

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Fee (\$)	Fee Paid (\$)
-20 or HP=	x	=			

- 20 or HP=  x  =  Fee (\$)

- 3 or HP=  x  =  Fee (\$)

HP = highest number of total claims paid for, if greater than 20.

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer

listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x	=	

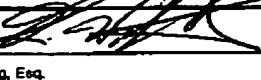
**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge) : Filing a brief in support of an appeal

\$250.00

**SUBMITTED BY**

Signature		Registration No. (Attorney/Agent)	39,400	Telephone	(732) 530-9040
Name (Print/Type)	Kin-Wah Tong, Esq.			Date	September 28, 2006

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PATENT  
Atty. Dkt. No. SRI/4438

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:  
Butzberger et al.  
§  
§  
§  
Serial No.: 09/894,898  
§ Group Art Unit: 2626  
§  
§ Confirmation No.: 3387  
§ Examiner: Pierre, Myriam  
§  
§ Filed: June 28, 2001  
§  
§ For: Method of Dynamically Altering  
Grammars in a Memory  
Efficient Speech Recognition  
System  
§  
§

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September 28, 2006  
Date

  
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Dear Sir:

**APPEAL BRIEF**

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2626 dated March 28, 2006, finally rejecting claims 1-36. Please charge all fees that may be required to make this Brief timely and acceptable to the Patent Office to Deposit Account No. 20-0782.

09/29/2006 TL0111 00000021 200782 09894898  
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SEP 28 2006

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 2 of 42**REAL PARTY IN INTEREST**

The real party in interest is SRI International, Inc., located in Menlo Park, CA.

**RELATED APPEALS AND INTERFERENCES**

The Appellant knows of no related appeals or interferences that might directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

**STATUS OF CLAIMS**

Claims 1-6 and 8-36 are pending in the application. Claim 7 is cancelled. Claims 1-6 and 8-36 were originally presented in the application. Claims 1-6 and 8-36 stand rejected in view of several references as discussed below. The rejection of claims 1-6 and 8-36 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

**STATUS OF AMENDMENTS**

A first amendment to the claims was submitted after a non-final rejection dated August 3, 2004 and was subsequently rejected in a final rejection dated June 27, 2005. A Request for Continued Examination including a second amendment to the claims was filed on August 29, 2005. A third amendment to the claims was submitted after a non-final rejection dated October 5, 2005. A final rejection was then issued on March 28, 2006, from which Appellant now appeals.

**SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides a method of dynamically altering grammars in a memory efficient speech recognition system. In the embodiment of independent claim 1, a method for allocating memory in a speech recognition system generally comprises acquiring a first set of data structures that contain a grammar, a word subgrammar, a phone subgrammar and a state subgrammar, each of the subgrammars related to the grammar (Pg. 5, ¶ 0020; Fig. 2), wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 3 of 42

remote computer (Pg. 7, ¶ 0028; Fig. 4). The method further comprises acquiring a speech signal (Pg. 5, ¶ 0021; Fig. 2) and performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs (Pg. 5, ¶ 0022; Fig. 2). The method then allocates memory for one of the subgrammars when a transition to that subgrammar is made during the probabilistic search (Pg. 6, ¶ 0023; Fig. 2).

In the embodiment of independent claim 11, a method for recognizing speech generally comprises acquiring a first set of data structures that contain a grammar, a word subgrammar, a phone subgrammar and a state subgrammar, each of the subgrammars related to the grammar (Pg. 5, ¶ 0020; Fig. 2), wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer (Pg. 7, ¶ 0028; Fig. 4). The method further comprises acquiring a speech signal (Pg. 5, ¶ 0021; Fig. 2) and performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs (Pg. 5, ¶ 0022; Fig. 2). The method allocates memory for one of the subgrammars when a transition to that subgrammar is made during the probabilistic search (Pg. 6, ¶ 0023; Fig. 2). Finally, the method comprises computing a probability of a match between the speech signal and an element of the subgrammar for which memory has been allocated (Pg. 6, ¶ 0023; Fig. 2).

In the embodiment of independent claim 18, a method for recognizing speech generally comprises acquiring a first set of data structures that contain a top level grammar and a plurality subgrammars, each of the subgrammars hierarchically related to the grammar and to each other (Pg. 5, ¶ 0020; Fig. 2), wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer (Pg. 7, ¶ 0028; Fig. 4). The method further comprises acquiring a speech signal (Pg. 5, ¶ 0021; Fig. 2) and performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs (Pg. 5, ¶ 0022; Fig. 2). The method then allocates memory for specific subgrammars when transitions to those specific subgrammars are made during the probabilistic search (Pg. 6, ¶ 0023; Fig. 2). Finally, the method

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 4 of 42

comprises computing probabilities of matches between the speech signal and elements of the subgrammars for which memory has been allocated (Pg. 6, ¶ 0023; Fig. 2).

In the embodiment of independent claim 34, a method for allocating memory in a speech recognition system generally comprises acquiring a set of data structures that contain a grammar and one or more subgrammars related to the grammar (Pg. 5, ¶ 0020; Fig. 2), wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer (Pg. 7, ¶ 0028; Fig. 4). The method further comprises acquiring a speech signal (Pg. 5, ¶ 0021; Fig. 2) and performing a probabilistic search using the speech signal as an input, and using the set of data structures as possible inputs (Pg. 5, ¶ 0022; Fig. 2). The method then allocates memory for a selected one or more of the subgrammars when a transition to the selected subgrammar is made during the probabilistic search (Pg. 6, ¶ 0023; Fig. 2).

In the embodiment of independent claim 35, a method for recognizing speech generally comprises acquiring a set of data structures that contain a grammar and one or more subgrammars related to the grammar (Pg. 5, ¶ 0020; Fig. 2), wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer (Pg. 7, ¶ 0028; Fig. 4). The method further comprises receiving spoken input (Pg. 5, ¶ 0021; Fig. 2) and using one or more of the data structures to recognize the spoken input (Pg. 5, ¶ 0022; Fig. 2). While the speech recognition system is operating, the method acquires a second set of data structures that contain a second grammar and one or more subgrammars related to the second grammar (Pg. 6, ¶ 0023; Fig. 2). Finally, the method repeats the steps of receiving and recognizing spoken input using the second set of data structures (Pg. 6, ¶ 0023; Fig. 2).

In the embodiment of independent claim 36, a method for recognizing speech generally comprises acquiring from a first remote computer (Pg. 7, ¶ 0028; Fig. 4) a set of data structures that contain a grammar and one or more subgrammars related to the grammar (Pg. 5, ¶ 0020; Fig. 2). The method further comprises receiving spoken input (Pg. 5, ¶ 0021; Fig. 2) and using one or more of the data structures to recognize the spoken input (Pg. 5, ¶ 0022; Fig. 2). While the speech recognition system is operating,

BRIEF ON APPEAL  
 Serial No. 09/894,898  
 Page 5 of 42

the method then acquires a second set of data structures from the first remote computer or from a second remote computer, the second set of data structures containing a second grammar and one or more subgrammars related to the second grammar (Pg. 6, ¶ 0023; Fig. 2). Finally, the method repeats the steps of receiving and recognizing spoken input using the second set of data structures (Pg. 6, ¶ 0023; Fig. 2).

### GROUNDS OF REJECTION

1. Claims 1-6 and 8-36 stand rejected under 35 U.S.C. §103(a) as being obvious over *Brown et al.* (U.S. Patent No. 5,719,997, hereinafter “*Brown*”) in view of *Ehsani et al.* (U.S. Patent Application Publication No. 2002/0032564, hereinafter “*Ehsani*”).

### THE REFERENCES

The Examiner relies on the following references:

Author	Publication Title or Reference number	Publication Date
<i>Brown et al.</i>	U.S. Patent No. 5,719,997	February 17, 1998
<i>Ehsani et al.</i>	U.S. Patent Application Publication No. 2002/0032564	March 14, 2002

### BRIEF DESCRIPTION OF THE REFERENCES

U.S. Patent No. 5,719,997 to *Brown* teaches a speech recognition system that uses an evolutional grammar to recognize an input speech signal in real time (See, *Brown*, column 2, lines 11-13). In particular, *Brown* teaches that as speech recognition processing begins, only a portion of a system grammar (*i.e.*, a vocabulary comprising a plurality of interrelated words) is implemented for recognition purposes (See, *Brown*, column 8, lines 12-15). As more of the speech signal is received by the system and as processing proceeds, additional portions of the grammar network (*i.e.*, additional words or vocabulary) are implemented as necessary (See, *Brown*, column 8, lines 16-20). In

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 6 of 42

other words, a single system grammar is assembled, piece-by-piece, as the speech signal is received.

United States Patent Application Publication No. 2002/0032564 to *Ehsani* teaches a method for creating grammar networks for use in natural language voice user interfaces (NLVUIs) (See, *Ehsani*, Abstract). Valid phrases are extracted from a text corpus and clustered into classes to create a "thesaurus" of fixed word combinations that represent different ways of saying the same thing (See, *Ehsani*, ¶ 0035-0051). In this way, anticipated user responses can be expanded into alternative linguistic variants (See, *Ehsani*, ¶0023).

## ARGUMENT

### THE ISSUES UNDER 35 U.S.C. §103

#### A. 35 U.S.C. §103(a) – *Brown* In view of *Ehsani*

##### 1. Claims 1, 11, 18 and 34-36

The Examiner rejected claims 1, 11, 18 and 34-36 in the Final Office Action under 35 U.S.C. §103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest every limitation of the claimed invention. Namely, *Brown* and *Ehsani* both fail to disclose or suggest the novel invention of generating a grammar and one or more related subgrammars (including, for example, a word subgrammar, a phone subgrammar and a state subgrammar) based at least in part on a grammar provided by a remote computer, as claimed in Appellant's independent claims 1, 11, 18 and 34-36. Neither *Brown* nor *Ehsani* discloses a grammar provided by a remote computer. The Examiner concedes that *Brown* does not teach this limitation. Appellant submits that *Ehsani* at most teaches receiving a speech signal from a remote computer, and does not disclose, teach or suggest a grammar provided by a remote computer.

Specifically, Appellant's claims 1, 11, 18 and 34-36 positively recite:

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 7 of 42

1. A method for allocating memory in a speech recognition system comprising the steps of:

acquiring a first set of data structures that contain a grammar, a word subgrammar, a phone subgrammar and a state subgrammar, each of the subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs; and

allocating memory for one of the subgrammars when a transition to that subgrammar is made during the probabilistic search. (Emphasis added)

11. In a speech recognition system, a method for recognizing speech comprising the steps of:

acquiring a first set of data structures that contain a grammar, a word subgrammar, a phone subgrammar and a state subgrammar, each of the subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs;

allocating memory for one of the subgrammars when a transition to that subgrammar is made during the probabilistic search; and

computing a probability of a match between the speech signal and an element of the subgrammar for which memory has been allocated. (Emphasis added)

18. In a speech recognition system, a method for recognizing speech comprising the steps of:

acquiring a first set of data structures that contain a top level grammar and a plurality subgrammars, each of the subgrammars hierarchically related to the grammar and to each other, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs;

allocating memory for specific subgrammars when transitions to those specific subgrammars are made during the probabilistic search; and

computing probabilities of matches between the speech signal and elements of the subgrammars for which memory has been allocated. (Emphasis added)

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 8 of 42

34. A method for allocating memory in a speech recognition system comprising the steps of:

acquiring a set of data structures that contain a grammar and one or more subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the set of data structures as possible inputs; and

allocating memory for a selected one or more of the subgrammars when a transition to the selected subgrammar is made during the probabilistic search. (Emphasis added)

35. In a speech recognition system, a method for recognizing speech comprising the steps of:

(a) acquiring a set of data structures that contain a grammar and one or more subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

(b) receiving spoken input;

(c) using one or more of the data structures to recognize the spoken input;

(d) while the speech recognition system is operating, acquiring a second set of data structures that contain a second grammar and one or more subgrammars related to the second grammar; and

(e) repeating steps (b) and (c), using the second set of data structures in step (c). (Emphasis added)

36. In a speech recognition system, a method for recognizing speech comprising the steps of:

(a) acquiring from a first remote computer a set of data structures that contain a grammar and one or more subgrammars related to the grammar;

(b) receiving spoken input;

(c) using one or more of the data structures to recognize the spoken input;

(d) while the speech recognition system is operating, acquiring a second set of data structures from the first remote computer or from a second remote computer, the second set of data structures containing a second grammar and one or more subgrammars related to the second grammar; and

(e) repeating steps (b) and (c), using the second set of data structures in step (c). (Emphasis added)

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 9 of 42

The Appellant's invention, with regards to at least claims 1, 11, 18 and 34-36 is directed, at least in part, a method for allocating memory in a speech recognition system. Specifically, the Appellant's invention provides a method for speech recognition in which memory is allocated to a particular system subgrammar when a transition is made to that subgrammar during a probabilistic search. A system vocabulary has a hierarchical data structure including at least one top-level grammar (e.g., "Days of the Week") and at least one subgrammar within that top-level grammar such as a word subgrammar (e.g., Monday, Tuesday, Wednesday, etc.), a phone subgrammar (e.g., /m/, /ah/, /n/, /d/, /ey/, etc.) and a state subgrammar (e.g., comprising Hidden Markov Models). When the system receives a speech signal for processing, the speech signal is input, along with the (unexpanded) top-level grammar and one or more subgrammars, into a probabilistic search. When a transition is made to a particular subgrammar during the probabilistic search, memory is allocated to the subgrammar, which may then be expanded and evaluated to assess the probability of a match between the speech signal and an element in the subgrammar. In this manner, memory is conserved and allocated only to portions of the system vocabulary that are currently needed for speech processing. In addition, at least part of the information used to generate the top-level grammar and/or the related subgrammars (e.g., a selected grammar) may be provided (or selected from a set of local possibilities) by a remote computer or server, to further conserve the memory required to operate the speech recognition system (which may be implemented, for example, in a portable device).

Neither *Brown* nor *Ehsani* teaches such a method, as described in Appellant's independent claims. The Examiner conceded in the Final Office Action of March 28, 2006 that *Brown* does not teach all of the limitations of the Appellant's independent claims (See, Final Office Action of March 28, 2006, Pg. 6: "*Brown* et al. do not explicitly teach implementing a remote computer"). The Examiner submits, however, that "*Ehsani* et al. do teach wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer", and further that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine *Brown* and *Ehsani* to yield the

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 10 of 42

Appellant's claimed invention (See, Final Office Action of March 28, 2006, Pg. 6). The Appellant respectfully disagrees with the Examiner's characterization of the teachings of *Ehsani*.

By contrast, *Ehsani* discusses a known speech recognition application in which the invention disclosed by *Ehsani* could be implemented, where the speech recognition application allows for remote provision of a speech signal. This is not the same as receiving a grammar used to recognize the speech signal from a remote device. Thus, *Ehsani* fails to bridge the gap in the teachings of *Brown*.

For example, the Examiner refers to paragraph [0200] of *Ehsani* to support the rejection under 35 U.S.C. §103. This portion of *Ehsani* at most describes a common system in which a database is accessed remotely using voice commands (e.g., received via a telephone) (See, e.g., *Ehsani*, paragraph 0200: "...remote access of databases and/or control of applications using a telephone or other hand-held device and simple natural voice commands", emphasis added). As described by *Ehsani*, processing of the voice commands is performed by a voice telephony server (i.e., the voice telephony server is where speech recognition processing takes place).

Specifically, the voice telephony server receives a voice command from a user, processes this voice command to extract a request (e.g., information retrieval, automated purchase, etc.), and retrieves information from the database to fulfill the request. Although this process does involve the use of a recognition grammar to extract the request from the voice command, *Ehsani* does not teach that this grammar is provided to the voice telephony server, even in part, by a remote computer. In fact, the process taught by *Ehsani* for use in processing a user's voice input does not at any stage teach or suggest that the voice telephony server contacts a remote computer for assistance in the recognition process (see, *Ehsani*, paragraphs [0206] – 0217]).

The only data items that are provided to the voice telephony server by a remote device are the input voice command (received, e.g., via telephone) and, in some cases, the information required to respond to the voice command (retrieved, e.g., from the database or from an Internet web site). Thus, the voice telephony server described by *Ehsani* clearly does not teach providing a grammar (i.e., for use in recognizing the voice command) to the voice telephony server via a remote computer.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 11 of 42

In a telephone interview on June 28, 2006, the Examiner further pointed to paragraph [0203] of *Ehsani* to support the rejection under 35 U.S.C. §103. However, the Appellant submits that this portion of *Ehsani* also fails to disclose or suggest generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. By contrast, this portion of *Ehsani* discusses speech applications that allow Internet access using an audio input device (e.g., a telephone). Again, processing (e.g., recognition) of a voice command takes place at the speech application, and the voice command to be processed is received remotely (i.e., via the audio input device). Nowhere is it disclosed or suggested that the speech application retrieves a grammar for use in processing the voice command from a remote device.

Appellant submits that, for at least these reasons, independent claims 1, 11, 18 and 34-36 fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

It is further noted that although independent claims 1, 11, 18 and 34-36 are discussed collectively for economy's sake, independent claims 1, 11, 18 and 34-36 stand apart as being individually patentable under the provisions of 35 U.S.C. §103. In particular, claim 1 recites a method for allocating memory in a speech recognition system; claim 11 recites a method for recognizing speech in a speech recognition system; claim 18 recites a method for recognizing speech in a speech recognition system; claim 34 recites a method for allocating memory in a speech recognition system; claim 35 recites a method for recognizing speech in a speech recognition system; and claim 36 recites a method for recognizing speech in a speech recognition system. Thus, the patentability of any of independent claims 1, 11, 18 and 34-36 does not depend on the patentability of the other claims.

## 2. Claim 2

The Examiner rejected claim 2 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 2, and

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 12 of 42

that, moreover, the portions of *Brown* cited by the Examiner actually teach away from the limitations recited in claim 2.

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 2 depends. Thus, claim 2 is patentable at least for the same reasons. Moreover, claim 2 recites the additional limitation of the probabilistic search being a Viterbi beam search. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the use of a Viterbi beam search.

Finally, *Brown* actually teaches away from the use of a Viterbi beam search. *Brown* does not teach the use of Viterbi beam searches as part of the disclosed invention, but rather mentions Viterbi algorithms and beam searching methods in the Background as existing methods that are inferior to the disclosed invention (See, *Brown*, column 1, lines 40-45: "While progress has been made in reducing computation requirements through the use of beam searching methods, ..., and Viterbi algorithms ..., these methods do not fully address the problems of large memory consumption", emphasis added).

Appellant submits that, for at least these reasons, claim 2 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

### 3. Claim 3

The Examiner rejected claim 3 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 3. Neither *Brown* nor *Ehsani* discloses a grammar sent through a communication channel by a remote computer. The Examiner concedes that *Brown* does not teach this limitation (See, Final Office Action of March 28, 2006, Pg. 7). Appellant submits that *Ehsani* at most teaches receiving a speech signal through a communication channel, and does not disclose, teach or suggest a grammar sent though a communication channel by a remote computer.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 13 of 42

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 3 depends. Thus, claim 3 is patentable at least for the same reasons. Moreover, *Brown* and *Ehsani* also fail to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, where the remote computer sends the grammar and subgrammars through a communication channel, as positively recited by claim 3.

Specifically, Appellant's claim 3 recites:

3. The method of claim 1 wherein the set of data structures is sent through a communication channel by a remote computer. (Emphasis added)

The Examiner alleges that *Ehsani* teaches that "the set of data structures for a voice-user interface is sent through a communication channel by a remote computer" (See, Final Office Action, Pg. 7). However, as discussed above with reference to the rejection of independent claims 1, 11, 18 and 34-36, *Ehsani* fails to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. Thus, it follows that *Brown* in view of *Ehsani* likewise fails to teach, show or suggest that the grammar and subgrammars are sent by the remote computer through a communication channel. Nowhere does *Ehsani* teach that a grammar traverses a communication channel from one device to another.

Appellant submits that, for at least these reasons, claim 3 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 4. Claim 4

The Examiner rejected claim 4 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 4. Neither *Brown* nor *Ehsani* discloses a grammar that is included in code that defines a web page. The Examiner concedes that *Brown* does not teach this limitation (See, Final Office Action of March 28, 2006, Pg. 7). Appellant submits that *Ehsani* at most teaches

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 14 of 42

controlling or accessing a web page remotely using voice commands, and does not disclose, teach or suggest a grammar that is included in code that defines a web page.

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 4 depends. Thus, claim 4 is patentable at least for the same reasons. Moreover, *Brown* and *Ehsani* also fail to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, where the grammars are included in code that defines a web page, as positively recited by claim 4.

Specifically, Appellant's claim 4 recites:

4. The method of claim 3 wherein the set of data structures is included in code that defines a web page. (Emphasis added)

The Examiner alleges that *Ehsani* teaches that "a set of data structures included in code that defines a web page and data structures associated with one or more web pages" (See, Final Office Action, Pg. 7). However, as discussed above with reference to the rejection of independent claims 1, 11, 18 and 34-36, *Ehsani* fails to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. Thus, it follows that *Brown* in view of *Ehsani* likewise fails to teach, show or suggest that the grammar and subgrammars are included in code that defines a web page. Although *Ehsani* does teach that the voice telephony sever may function as an intermediary that allows a user to interact with a web page by providing voice commands to the server, nowhere does Ehsani teach that a grammar for recognizing the voice commands is included in code that defines a web page.

Appellant submits that, for at least these reasons, claim 4 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

##### 5. Claim 5

The Examiner rejected claim 5 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 15 of 42

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 5. Neither *Brown* nor *Ehsani* discloses a grammar that is associate with one or more web pages. The Examiner concedes that *Brown* does not teach this limitation (See, Final Office Action of March 28, 2006, Pg. 8). Appellant submits that *Ehsani* at most teaches controlling or accessing a web page remotely using voice commands, and does not disclose, teach or suggest a grammar that is associated with one or more web pages.

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 5 depends. Thus, claim 5 is patentable at least for the same reasons. Moreover, *Brown* and *Ehsani* also fail to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, where the grammars are associated with one or more web pages, as positively recited by claim 5.

Specifically, Appellant's claim 5 recites:

5. The method of claim 3 wherein the set of data structures is associated with one or more web pages. (Emphasis added)

The Examiner alleges that *Ehsani* teaches that "a set of data structures included in code that defines a web page and data structures associated with one or more web pages" (See, Final Office Action, Pg. 8). However, as discussed above with reference to the rejection of independent claims 1, 11, 18 and 34-36, *Ehsani* fails to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. Thus, it follows that *Brown* in view of *Ehsani* likewise fails to teach, show or suggest that the grammar and subgrammars are associated with one or more web pages. Although *Ehsani* does teach that the voice telephony sever may function as an intermediary that allows a user to interact with a web page by providing voice commands to the server, nowhere does *Ehsani* teach that a grammar for recognizing the voice commands is associated with one or more web pages.

Appellant submits that, for at least these reasons, claim 5 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 16 of 42

## 6. Claim 6

The Examiner rejected claim 6 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 6. Neither *Brown* nor *Ehsani* discloses a grammar that is selected by a remote computer. The Examiner concedes that *Brown* does not teach this limitation (See, Final Office Action of March 28, 2006, Pg. 8). Appellant submits that *Ehsani* at most teaches selection of data to satisfy a user request by remote computer, and does not disclose, teach or suggest a grammar that is selected by a remote computer.

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 6 depends. Thus, claim 6 is patentable at least for the same reasons. Moreover, *Brown* and *Ehsani* also fail to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, where the grammar and subgrammars are selected by a remote computer, as positively recited by claim 6.

Specifically, Appellant's claim 6 recites:

6. The method of claim 1 wherein the set of data structures is selected by a remote computer. (Emphasis added)

The Examiner alleges that *Ehsani* teaches that "a set of data structures is selected by a remote computer (internet)" (See, Final Office Action, Pg. 8). However, as discussed above with reference to the rejection of independent claims 1, 11, 18 and 34-36, *Ehsani* fails to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. Thus, it follows that *Brown* in view of *Ehsani* likewise fails to teach, show or suggest that the grammar and subgrammars are selected by the remote computer or the internet. Controlling an internet application using a voice telephony server is not the same as the internet application providing a grammar for processing voice input to the voice telephony server.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 17 of 42

Appellant submits that, for at least these reasons, claim 6 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 7. Claim 8

The Examiner rejected claim 8 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 8. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 8 depends. Thus, claim 8 is patentable at least for the same reasons.

Moreover, claim 8 recites the additional limitation of acquiring a second set of data structures containing a second grammar and multiple second subgrammars related to the second grammar. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the acquisition of a second set of grammars and subgrammars.

Appellant submits that, for at least these reasons, claim 8 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 8. Claim 9

The Examiner rejected claim 9 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 9. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 9 depends. Thus, claim 9 is patentable at least for the same reasons.

Moreover, claim 9 recites the additional limitation of replacing the first set of data structures (grammar and subgrammars) with a second set of data structures containing a second grammar and multiple second subgrammars related to the second grammar.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 18 of 42

*Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the replacement of the grammar with a second set of grammars and subgrammars.

Appellant submits that, for at least these reasons, claim 9 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 9. Claim 10

The Examiner rejected claim 10 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 10. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 1, from which claim 10 depends. Thus, claim 10 is patentable at least for the same reasons.

Moreover, claim 10 recites the additional limitation of acquiring a second set of data structures containing a second grammar and multiple second subgrammars related to the second grammar while the speech recognition system is operating. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the acquisition of a second set of grammars and subgrammars while the speech recognition system is operating.

Appellant submits that, for at least these reasons, claim 10 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 10. Claim 12

The Examiner rejected claim 12 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 12. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 19 of 42

of independent claim 11, from which claim 12 depends. Thus, claim 12 is patentable at least for the same reasons.

Moreover, claim 12 recites the additional limitation of the probabilistic search being a Viterbi beam search. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the use of a Viterbi beam search.

Finally, *Brown* actually teaches away from the use of a Viterbi beam search. *Brown* does not teach the use of Viterbi beam searches as part of the disclosed invention, but rather mentions Viterbi algorithms and beam searching methods in the Background as existing methods that are inferior to the disclosed invention (See, *Brown*, column 1, lines 40-45: "While progress has been made in reducing computation requirements through the use of beam searching methods, ..., and Viterbi algorithms ..., these methods do not fully address the problems of large memory consumption", emphasis added).

Appellant submits that, for at least these reasons, claim 12 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 11. Claim 13

The Examiner rejected claim 13 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 13. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 11, from which claim 13 depends. Thus, claim 13 is patentable at least for the same reasons.

Moreover, claim 13 recites the additional limitation of acquiring a second set of data structures containing a second grammar and multiple second subgrammars related to the second grammar. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at

## BRIEF ON APPEAL

Serial No. 09/894,898

Page 20 of 42

least in part on a grammar provided by a remote computer, as applied to the acquisition of a second set of grammars and subgrammars.

Appellant submits that, for at least these reasons, claim 13 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

### 12. Claim 14

The Examiner rejected claim 14 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 14. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 11, from which claim 14 depends. Thus, claim 14 is patentable at least for the same reasons.

Moreover, claim 14 recites the additional limitation of replacing the first set of data structures (grammar and subgrammars) with a second set of data structures containing a second grammar and multiple second subgrammars related to the second grammar. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the replacement of the grammar with a second set of grammars and subgrammars.

Appellant submits that, for at least these reasons, claim 14 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

### 13. Claim 15

The Examiner rejected claim 15 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 15. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 11, from which claim 15 depends. Thus, claim 15 is patentable at least for the same reasons.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 21 of 42

Moreover, claim 15 recites the additional limitation of acquiring a second set of data structures containing a second grammar and multiple second subgrammars related to the second grammar while the speech recognition system is operating. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the acquisition of a second set of grammars and subgrammars while the speech recognition system is operating.

Appellant submits that, for at least these reasons, claim 15 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 14. Claim 16

The Examiner rejected claim 16 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 16. Neither *Brown* nor *Ehsani* discloses a grammar that is included in code that defines a web page. The Examiner concedes that *Brown* does not teach this limitation (See, Final Office Action of March 28, 2006, Pg. 13). Appellant submits that *Ehsani* at most teaches controlling or accessing a web page remotely using voice commands, and does not disclose, teach or suggest a grammar that is included in code that defines a web page.

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 11, from which claim 16 depends. Thus, claim 16 is patentable at least for the same reasons. Moreover, *Brown* and *Ehsani* also fail to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, where a second set of grammars is included in code that defines a web page, as positively recited by claim 16.

Specifically, Appellant's claim 16 recites:

16. The method of claim 15 wherein the second set of data structures is included in code that defines a web page. (Emphasis added)

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 22 of 42

The Examiner alleges that *Ehsani* teaches that "a set of data structures included in code that defines a web page and data structures associated with one or more web pages" (See, Final Office Action, Pg. 13). However, as discussed above with reference to the rejection of independent claims 1, 11, 18 and 34-36, *Ehsani* fails to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. Thus, it follows that *Brown* in view of *Ehsani* likewise fails to teach, show or suggest that a second set of grammars and subgrammars is included in code that defines a web page. Although *Ehsani* does teach that the voice telephony sever may function as an intermediary that allows a user to interact with a web page by providing voice commands to the server, nowhere does *Ehsani* teach that a grammar for recognizing the voice commands is included in code that defines a web page.

Appellant submits that, for at least these reasons, claim 16 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 15. Claim 17

The Examiner rejected claim 17 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 17. Neither *Brown* nor *Ehsani* discloses a grammar that is associate with one or more web pages. The Examiner concedes that *Brown* does not teach this limitation (See, Final Office Action of March 28, 2006, Pg. 13). Appellant submits that *Ehsani* at most teaches controlling or accessing a web page remotely using voice commands, and does not disclose, teach or suggest a grammar that is associated with one or more web pages.

As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 11, from which claim 17 depends. Thus, claim 17 is patentable at least for the same reasons. Moreover, *Brown* and *Ehsani* also fail to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 23 of 42

computer, where a second set of grammars is associated with one or more web pages,  
as positively recited by claim 17.

Specifically, Appellant's claim 17 recites:

17. The method of claim 15 wherein the second set of data structures is  
associated with one or more web pages. (Emphasis added)

The Examiner alleges that *Ehsani* teaches that "a set of data structures included in code that defines a web page and data structures associated with one or more web pages" (See, Final Office Action, Pg. 14). However, as discussed above with reference to the rejection of independent claims 1, 11, 18 and 34-36, *Ehsani* fails to teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer. Thus, it follows that *Brown* in view of *Ehsani* likewise fails to teach, show or suggest that a second set of grammars and subgrammars is associated with one or more web pages. Although *Ehsani* does teach that the voice telephony sever may function as an intermediary that allows a user to interact with a web page by providing voice commands to the server, nowhere does Ehsani teach that a grammar for recognizing the voice commands is associated with one or more web pages.

Appellant submits that, for at least these reasons, claim 17 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 16. Claim 19

The Examiner rejected claim 19 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 19. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 19 depends. Thus, claim 19 is patentable at least for the same reasons.

Moreover, claim 19 recites the additional limitation of a top-level grammar including one or more word subgrammars, the word subgrammars including words that are related according to word-to-word transition probabilities. *Brown* and *Ehsani* do not

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 24 of 42

teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the acquisition of a top-level grammar including word subgrammars.

Appellant submits that, for at least these reasons, claim 19 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 17. Claim 20

The Examiner rejected claim 20 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 20. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 20 depends. Thus, claim 20 is patentable at least for the same reasons.

Moreover, claim 20 recites the additional limitation of a word subgrammar including one or more phone subgrammars, the phone subgrammars including phones that are related according to phone-to-phone transition probabilities. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the acquisition of a word subgrammar including phone subgrammars.

Appellant submits that, for at least these reasons, claim 20 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 18. Claim 21

The Examiner rejected claim 21 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 21. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 25 of 42

of independent claim 18, from which claim 21 depends. Thus, claim 21 is patentable at least for the same reasons.

Moreover, claim 21 recites the additional limitation of a phone subgrammar including one or more state subgrammars, the state subgrammars including states that are related according to state-to-state transition probabilities. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the acquisition of a phone subgrammar including state subgrammars.

Appellant submits that, for at least these reasons, claim 21 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 19. Claim 22

The Examiner rejected claim 22 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 22. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 22 depends. Thus, claim 22 is patentable at least for the same reasons.

Moreover, claim 22 recites the additional limitation of computing probabilities of matches between the speech signal and elements of the subgrammars for which memory has been allocated using one or more probability distributions associated with states. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the application of probability distributions to compute match probabilities between a speech signal and elements of subgrammars.

Appellant submits that, for at least these reasons, claim 22 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 26 of 42

## 20. Claim 23

The Examiner rejected claim 23 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 23. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 23 depends. Thus, claim 23 is patentable at least for the same reasons.

Moreover, claim 23 recites the additional limitation of allocating an initial phone and an initial state for the initial phone in memory when a word is allocated in memory. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the allocation of memory to a word, initial phone and initial state.

Appellant submits that, for at least these reasons, claim 23 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 21. Claim 24

The Examiner rejected claim 24 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 24. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 24 depends. Thus, claim 24 is patentable at least for the same reasons.

Moreover, claim 24 recites the additional limitation of allocating one or more subsequent states in memory until the end of a phone is reached, where the allocation is based on a transition probability at each state. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 27 of 42

applied to the allocation of memory to one or more subsequent states until the end of a phone is reached.

Appellant submits that, for at least these reasons, claim 24 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 22. Claim 25

The Examiner rejected claim 25 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 25. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 25 depends. Thus, claim 25 is patentable at least for the same reasons.

Moreover, claim 25 recites the additional limitation of allocating one or more subsequent phones in memory until the end of a word is reached, where the allocation is based on a transition probability at each phone. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the allocation of memory to one or more subsequent phones until the end of a word is reached.

Appellant submits that, for at least these reasons, claim 25 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 23. Claim 26

The Examiner rejected claim 26 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 26. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 26 depends. Thus, claim 26 is patentable at least for the same reasons.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 28 of 42

Moreover, claim 26 recites the additional limitation of deallocating a state from memory when a state probability falls below a state threshold. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the deallocation of states from memory.

Appellant submits that, for at least these reasons, claim 26 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 24. Claim 27

The Examiner rejected claim 27 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 27. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 27 depends. Thus, claim 27 is patentable at least for the same reasons.

Moreover, claim 27 recites the additional limitation of dynamically adjusting a state threshold. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the dynamic adjustment of a state threshold.

Appellant submits that, for at least these reasons, claim 27 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

#### 25. Claim 28

The Examiner rejected claim 28 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 28. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 29 of 42

of independent claim 18, from which claim 28 depends. Thus, claim 28 is patentable at least for the same reasons.

Moreover, claim 28 recites the additional limitation of deallocating a phone from memory when a phone probability falls below a phone threshold. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the deallocation of phones from memory.

Appellant submits that, for at least these reasons, claim 28 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 26. Claim 29

The Examiner rejected claim 29 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 29. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 29 depends. Thus, claim 29 is patentable at least for the same reasons.

Moreover, claim 29 recites the additional limitation of dynamically adjusting a phone threshold. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the dynamic adjustment of a phone threshold.

Appellant submits that, for at least these reasons, claim 29 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 27. Claim 30

The Examiner rejected claim 30 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 30. As

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 30 of 42

discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 30 depends. Thus, claim 30 is patentable at least for the same reasons.

Moreover, claim 30 recites the additional limitation of deallocating a word from memory when a word probability falls below a word threshold. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the deallocation of words from memory.

Appellant submits that, for at least these reasons, claim 30 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 28. Claim 31

The Examiner rejected claim 31 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 31. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 31 depends. Thus, claim 31 is patentable at least for the same reasons.

Moreover, claim 31 recites the additional limitation of dynamically adjusting a word threshold. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the dynamic adjustment of a word threshold.

Appellant submits that, for at least these reasons, claim 31 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

## 29. Claim 32

The Examiner rejected claim 32 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 31 of 42

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 32. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 32 depends. Thus, claim 32 is patentable at least for the same reasons.

Moreover, claim 32 recites the additional limitation of deallocating a phone from memory when all states associated with the phone are deallocated. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the deallocation of phones from memory.

Appellant submits that, for at least these reasons, claim 32 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

### 30. Claim 33

The Examiner rejected claim 33 in the Final Office Action under 35 U.S.C. 103 as being made obvious by *Brown* in view of *Ehsani*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Brown* and *Ehsani* do not, singly or in any permissible combination, teach, show or suggest all of the limitations of claim 33. As discussed above, *Brown* and *Ehsani* do not teach, show or suggest all of the limitations of independent claim 18, from which claim 33 depends. Thus, claim 33 is patentable at least for the same reasons.

Moreover, claim 33 recites the additional limitation of deallocating a word from memory when all phones associated with the word are deallocated. *Brown* and *Ehsani* do not teach, show or suggest the novel invention of generating a grammar and one or more related subgrammars based at least in part on a grammar provided by a remote computer, as applied to the deallocation of words from memory.

Appellant submits that, for at least these reasons, claim 33 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

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BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 32 of 42

**CONCLUSION**

For the reasons advanced above, Appellant respectfully urges that the rejections of claims 1-6 and 8-36 as being unpatentable under 35 U.S.C. §103 are improper. Reversal of the rejections in this appeal is respectfully requested.

If necessary, please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 20-0782, and please credit any excess fees to the above referenced deposit account.

Respectfully submitted,

9/28/06



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BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 33 of 42

## CLAIMS APPENDIX

1. (Previously Presented) A method for allocating memory in a speech recognition system comprising the steps of:

acquiring a first set of data structures that contain a grammar, a word subgrammar, a phone subgrammar and a state subgrammar, each of the subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs; and

allocating memory for one of the subgrammars when a transition to that subgrammar is made during the probabilistic search.

2. (Original) The method of claim 1 wherein the probabilistic search is a Viterbi beam search.

3. (Original) The method of claim 1 wherein the set of data structures is sent through a communication channel by a remote computer.

4. (Original) The method of claim 3 wherein the set of data structures is included in code that defines a web page.

5. (Original) The method of claim 3 wherein the set of data structures is associated with one or more web pages.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 34 of 42

6. (Original) The method of claim 1 wherein the set of data structures is selected by a remote computer.
7. (Cancelled)
8. (Original) The method of claim 1 further comprising the step of acquiring a second set of data structures that contain a second grammar, a second word subgrammar, a second phone subgrammar, and a second state subgrammar, each of the second subgrammars related to the second grammar.
9. (Original) The method of claim 8 wherein the second set of data structures replaces the first set of data structures.
10. (Original) The method of claim 8 wherein the second set of data structures is acquired while the speech recognition system is operating.
11. (Previously Presented) In a speech recognition system, a method for recognizing speech comprising the steps of:
  - acquiring a first set of data structures that contain a grammar, a word subgrammar, a phone subgrammar and a state subgrammar, each of the subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;
  - acquiring a speech signal;
  - performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs;
  - allocating memory for one of the subgrammars when a transition to that

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 35 of 42

subgrammar is made during the probabilistic search; and

computing a probability of a match between the speech signal and an element of the subgrammar for which memory has been allocated.

12. (Original) The method of claim 11 wherein the probabilistic search is a Viterbi beam search.

13. (Original) The method of claim 11 further comprising the step of acquiring a second set of data structures that contain a second grammar, a second word subgrammar, a second phone subgrammar, and a second state subgrammar, each of the second subgrammars related to the second grammar.

14. (Original) The method of claim 13 wherein the second set of data structures replaces the first set of data structures.

15. (Original) The method of claim 13 wherein the second set of data structures is acquired while the speech recognition system is operating.

16. (Original) The method of claim 15 wherein the second set of data structures is included in code that defines a web page.

17. (Original) The method of claim 15 wherein the second set of data structures is associated with one or more web pages.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 36 of 42

18. (Previously Presented) In a speech recognition system, a method for recognizing speech comprising the steps of:

acquiring a first set of data structures that contain a top level grammar and a plurality subgrammars, each of the subgrammars hierarchically related to the grammar and to each other, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the first set of data structures as possible inputs;

allocating memory for specific subgrammars when transitions to those specific subgrammars are made during the probabilistic search; and

computing probabilities of matches between the speech signal and elements of the subgrammars for which memory has been allocated.

19. (Original) The method of claim 18 wherein the top level grammar includes one or more word subgrammars, the word subgrammars including words that are related according to word-to-word transition probabilities.

20. (Original) The method of claim 19 wherein each word in a word subgrammar includes one or more phone subgrammars, the phone subgrammars including phones that are related according to phone-to-phone transition probabilities.

21. (Original) The method of claim 20 wherein each phone in a phone subgrammar includes one or more state subgrammars, the state subgrammars including states that

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 37 of 42

are related according to state-to-state transition probabilities.

22. (Original) The method of claim 21 wherein the probabilities of matches between the speech signal and elements of the subgrammars for which memory has been allocated are computed using one or more probability distributions associated with each state.

23. (Original) The method of claim 21 wherein when a word is allocated in memory, an initial phone for the word and an initial state for the initial phone are also allocated in memory.

24. (Original) The method of claim 23 wherein one or more subsequent states are allocated in memory until the end of the phone is reached, the allocation based on a transition probability at each state.

25. (Original) The method of claim 24 wherein one or more subsequent phones are allocated in memory until the end of the word is reached, the allocation based on a transition probability at each phone.

26. (Original) The method of claim 21 wherein when a state probability falls below a state threshold, the state is deallocated from memory.

27. (Previously Presented) The method of claim 26 wherein the state threshold is dynamically adjustable.

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 38 of 42

28. (Original) The method of claim 21 wherein when a phone probability falls below a phone threshold, the phone is deallocated from memory.

29. (Previously Presented) The method of claim 28 wherein the phone threshold is dynamically adjustable.

30. (Original) The method of claim 21 wherein when a word probability falls below a word threshold, the word is deallocated from memory.

31. (Previously Presented) The method of claim 30 wherein the word threshold is dynamically adjustable.

32. (Original) The method of claim 26 wherein when all the states associated with a phone are deallocated from memory, the phone is deallocated from memory.

33. (Original) The method of claim 32 wherein when all the phones associated with a word are deallocated from memory, the word is deallocated from memory.

34. (Previously Presented) A method for allocating memory in a speech recognition system comprising the steps of:

acquiring a set of data structures that contain a grammar and one or more subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 39 of 42

provided by a remote computer;

acquiring a speech signal;

performing a probabilistic search using the speech signal as an input, and using the set of data structures as possible inputs; and

allocating memory for a selected one or more of the subgrammars when a transition to the selected subgrammar is made during the probabilistic search.

35. (Previously Presented) In a speech recognition system, a method for recognizing speech comprising the steps of:

(a) acquiring a set of data structures that contain a grammar and one or more subgrammars related to the grammar, wherein the first set of data structures is generated by the speech recognition system based at least in part on a grammar provided by a remote computer;

(b) receiving spoken input;

(c) using one or more of the data structures to recognize the spoken input;

(d) while the speech recognition system is operating, acquiring a second set of data structures that contain a second grammar and one or more subgrammars related to the second grammar; and

(e) repeating steps (b) and (c), using the second set of data structures in step (c).

36. (Original) In a speech recognition system, a method for recognizing speech comprising the steps of:

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 40 of 42

(a) acquiring from a first remote computer a set of data structures that contain a grammar and one or more subgrammars related to the grammar;

(b) receiving spoken input;

(c) using one or more of the data structures to recognize the spoken input;

(d) while the speech recognition system is operating, acquiring a second set of data structures from the first remote computer or from a second remote computer, the second set of data structures containing a second grammar and one or more subgrammars related to the second grammar; and

(e) repeating steps (b) and (c), using the second set of data structures in step (c).

BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 41 of 42

**EVIDENCE APPENDIX**

None

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BRIEF ON APPEAL  
Serial No. 09/894,898  
Page 42 of 42

**RELATED PROCEEDINGS APPENDIX**

None

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